United States Environmental Protection Agency
Washington, D.C. 20460

Water Compliance Inspection Report

Section A: National Data System Coding (i.e. PCS)

Transaction Code	NPDES	yr/mo/day	Inspection Type	Inspector	Fac Type
1 N 2	3 DC0000019 11	12 12/05/30 17	18 C	19 S	20 4

Remarks

21 _____ ,66

Inspection Work Days	Facility Self-Monitoring Evaluation Rating	B1	QA	Reserved
67 69	70 4	71 N	72 N	73 74 75 80

Section B: Facility Data

Name and Location of Facility Inspected *(For industrial users discharging to POTW, also include POTW name and NPDES permit number)*	Entry Time/Date	Permit Effective Date
Department of the Army Baltimore District, Corps of Engineers Washington Aqueduct Division 5900 MacArthur Boulevard, NW Washington, DC 20016-2514	9:00 AM 5/30/2012	11/20/2008
	Exit Time/Date 4:00 PM 5/30/2012	**Permit Expiration Date** 11/20/2013

Name(s) of On-Site Representative(s)/Title(s)/Phone and Fax Number(s)	Other Facility Data (e.g., ISC NAICS, and other descriptive information)
1. John Peterson, Superintendent, (202) 764-0009 2. Louis Levesque, Water Treatment Plant Supervisor; (202) 764-0018 3. Tenkasi Viswanathan, Laboratory Quality Assurance Officer, (202) 764-0732	

Name, Address of Responsible Official/Title/Phone and Fax Number	Contacted
Thomas P. Jacobus, General Manager Baltimore District, Corps of Engineers Washington Aqueduct Division 5900 MacArthur Boulevard, NW Washington, DC 20016-2514 Tel. (202) 764-0031; Fax (202) 764-2401	x Yes ____ No

Section C: Areas Evaluated During Inspection (Check only those areas evaluated)

X Permit	X Self-Monitoring Program	___ Pretreatment	___ MS4
X Records/Reports	X Compliance Schedules	X Pollution Prevention	
X Facility Site Review	X Laboratory	___ Storm Water	
X Effluent/Receiving Waters	X Operations & Maintenance	___ Combined Sewer Overflow	
___ Flow Measurement	X Sludge Handling/Disposal	___ Sanitary Sewer Overflow	

Section D: Summary of Findings/Comments

(Attach additional sheets of narrative and checklists, including Single Event Violation codes, as necessary)

SEV Codes	SEV Description
None	

Name(s) and Signature(s) of Inspector(s)	Agency/Office/Phone and Fax Numbers	Date
Adion Chinkuyu	DDOE; Tel.: (202) 535-2193; Fax: (202) 535-1363	5/30/12
George Onyullo	DDOE; Tel.: (202) 727-6529; Fax: (202) 535-1363	5/30/12
Signature of Management Q A Reviewer	**Agency/Office/Phone and Fax Numbers**	**Date**

Comments
See attachments.

	PERMIT NO. **DC0000019**
SECTIONS F THRU L: COMPLETE ON ALL INSPECTIONS, AS APPROPRIATE. N/A = NOT APPLICABLE	

SECTION F - FACILITY AND PERMIT BACKGROUND

ADDRESS OF PERMITTEE IF DIFFERENT FROM FACILITY (Including City, County and ZIP code)	**DATE OF LAST PREVIOUS INVESTIGATION BY EPA/STATE**
Same	10/20/2010
	FINDINGS 1. Numeric effluent violation - TSS, total aluminum, total copper and total iron exceeded permit limits. 2. Failure to implement SWPPP/SWMP/BMP - no training or inspection records were included in the BMP Plan. 3. No flow measuring device – flow not measured as indicated in the permit.

SECTION G - RECORDS AND REPORTS

RECORDS AND REPORTS MAINTAINED AS REQUIRED BY PERMIT. DETAILS:	X YES ____ NO ___ N/A
(a) ADEQUATE RECORDS MAINTAINED OF:	
(i) SAMPLING DATE, TIME, EXACT LOCATION	X YES __ NO __ N/A
(ii) ANALYSES DATES, TIMES	X YES __ NO __ N/A
(iii) INDIVIDUAL PERFORMING ANALYSIS	X YES __ NO __ N/A
(iv) ANALYTICAL METHODS/TECHNIQUES USED	X YES __ NO __ N/A
(v) ANALYTICAL RESULTS (e.g., consistent with self-monitoring report data)	X YES __ NO __ N/A
(b) MONITORING RECORDS (e.g., flow, pH, D.O., etc.) MAINTAINED FOR A MINIMUM OF THREE YEARS INCLUDING ALL ORIGINAL STRIP CHART RECORDINGS (e.g., continuous monitoring instrumentation, calibration and maintenance records).	X YES __ NO __ N/A
(c) LAB EQUIPMENT CALIBRATION AND MAINTENANCE RECORDS KEPT.	X YES __ NO __ N/A
(d) FACILITY OPERATING RECORDS KEPT INCLUDING LOGS FOR EACH TREATMENT UNIT.	X YES __ NO __ N/A
(e) QUALITY ASSURANCE RECORDS KEPT.	X YES __ NO __ N/A
(f) RECORDS MAINTAINED OF MAJOR CONTRIBUTING INDUSTRIES (and their compliance status) USING PUBLICLY OWNED TREATMENT WORKS.	___ YES __ NO X N/A

SECTION H - PERMIT VERIFICATION

INSPECTION OBSERVATIONS VERIFY THE PERMIT. DETAILS:	X YES ___ NO ____ N/A (Further explanation attached **See Notes**)
(a) CORRECT NAME AND MAILING ADDRESS OF PERMITTEE.	X YES __ NO __ N/A
(b) FACILITY IS AS DESCRIBED IN PERMIT.	X YES __ NO __ N/A
(c) PRINCIPAL PRODUCT(S) AND PRODUCTION RATES CONFORM WITH THOSE SET FORTH IN PERMIT APPLICATION.	X YES __ NO __ N/A
(d) TREATMENT PROCESSES ARE AS DESCRIBED IN PERMIT APPLICATION.	X YES __ NO __ N/A
(e) NOTIFICATION GIVEN TO EPA/STATE OF NEW, DIFFERENT OR INCREASED DISCHARGES	X YES __ NO __ N/A
(f) ACCURATE RECORDS OF RAW WATER VOLUME MAINTAINED.	X YES __ NO __ N/A
(g) NUMBER AND LOCATION OF DISCHARGE POINTS ARE AS DESCRIBED IN PERMIT.	X YES __ NO __ N/A
(h) CORRECT NAME AND LOCATION OF RECEIVING WATERS.	X YES __ NO __ N/A
(i) ALL DISCHARGES ARE PERMITTED.	X YES __ NO __ N/A

Comments:
Only Outfall 002Q discharges to Potomac River. Other outfalls stopped discharging because the facility started treating the residues/sediments in the Residue Processing Facility.

PERMIT NO. **DC0000019**

SECTION I - OPERATION AND MAINTENANCE

TREATMENT FACILITY PROPERLY OPERATED AND MAINTAINED. ___X__ YES ____ NO ____ N/A (Further explanation attached __**See Notes**)
DETAILS:

(a) STANDBY POWER OR OTHER EQUIVALENT PROVISIONS PROVIDED. __X__ YES __ NO __ N/A

(b) ADEQUATE ALARM SYSTEM FOR POWER OR EQUIPMENT FAILURES AVAILABLE. __X__ YES __ NO __ N/A

(c) REPORTS ON ALTERNATE SOURCE OF POWER SENT TO EPA/STATE AS REQUIRED BY PERMIT. ___ YES __ NO __X__ N/A

(d) SLUDGES AND SOLIDS ADEQUATELY DISPOSED. __X__ YES __ NO __ N/A

(e) ALL TREATMENT UNITS IN SERVICE. __X__ YES __ NO __ N/A

(f) CONSULTING ENGINEER RETAINED OR AVAILABLE FOR CONSULTATION ON OPERATION AND MAINTENANCE PROBLEMS. __X__ YES __ NO __ N/A

(g) QUALIFIED OPERATING STAFF PROVIDED. __X__ YES __ NO __ N/A

(h) ESTABLISHED PROCEDURES AVAILABLE FOR TRAINING NEW OPERATORS. __X__ YES __ NO __ N/A

(i) FILES MAINTAINED ON SPARE PARTS INVENTORY, MAJOR EQUIPMENT SPECIFICATIONS, AND PARTS AND EQUIPMENT SUPPLIERS. __X__ YES __ NO __ N/A

(j) INSTRUCTIONS FILES KEPT FOR OPERATION AND MAINTENANCE OF EACH ITEM OF MAJOR EQUIPMENT. __X__ YES __ NO __ N/A

(k) OPERATION AND MAINTENANCE MANUAL MAINTAINED. __X__ YES __ NO __ N/A

(l) SPCC PLAN AVAILABLE. **(see notes)** __X__ YES __ NO __ N/A

(m) REGULATORY AGENCY NOTIFIED OF BY-PASSING. (Dates _____) ___ YES __ NO __X__ N/A

(n) ANY BY-PASSING SINCE LAST INSPECTION. ___YES ___ NO __X__ N/A

(o) ANY HYDRAULIC AND/OR ORGANIC OVERLOADS EXPERIENCED. __ YES __ NO __X__ N/A

SECTION J - COMPLIANCE SCHEDULES

PERMITTEE IS MEETING COMPLIANCE SCHEDULE. __X__ YES ____ NO ____ N/A **(Further explanation attached)**

CHECK APPROPRIATE PHASE(S):

__ (a) THE PERMITTEE HAS OBTAINED THE NECESSARY APPROVALS FROM THE APPROPRIATE AUTHORITIES TO BEGIN CONSTRUCTION.

__ (b) PROPER ARRANGEMENT HAS BEEN MADE FOR FINANCING (mortgage commitments, grants, etc.).

__ (c) CONTRACTS FOR ENGINEERING SERVICES HAVE BEEN EXECUTED.

__ (d) DESIGN PLANS AND SPECIFICATIONS HAVE BEEN COMPLETED.

__ (e) CONSTRUCTION HAS COMMENCED.

__ (f) CONSTRUCTION AND/OR EQUIPMENT ACQUISITION IS ON SCHEDULE.

__X__ (g) CONSTRUCTION HAS BEEN COMPLETED.

__X__ (h) START-UP HAS COMMENCED.

__ (i) THE PERMITTEE HAS REQUESTED AN EXTENSION OF TIME.

Comments:

1. The Washington Aqueduct completed construction of the Residue Processing Facility and started treating/drying residues/sediments. The facility no longer discharges sediment laden water to the Potomac River. The facility is in compliance with the permit effluent limits.
2. The Washington Aqueduct revised its BMP and SPCC plans and is implementing them accordingly, including staff training.

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SECTION K - SELF-MONITORING PROGRAM

PART 1 - FLOW MEASUREMENT (Further explanation attached _____)
PERMITTEE FLOW MEASUREMENT MEETS THE REQUIREMENTS AND INTENT OF THE PERMIT. __X__ YES __ NO __ N/A
DETAILS:

(a) PRIMARY MEASURING DEVICE PROPERLY INSTALLED. __X__ YES __ NO N/A

TYPE OF DEVICE__ WEIR _X__PARSHALL FLUME ___MAGMETER ___VENTURI METER____ OTHER (Specify: **Use basin capacity to estimate effluent flow**)

(b) CALIBRATION FREQUENCY ADEQUATE. (Date of last calibration _ ___YES ___ NO __X__ N/A

(c) PRIMARY FLOW MEASURING DEVICE PROPERLY OPERATED AND MAINTAINED. __X__ YES __ NO ___ N/A

(d) SECONDARY INSTRUMENTS (totalizers, recorders, etc.) PROPERLY OPERATED AND MAINTAINED. ___ YES __ NO __X__ N/A

(e) FLOW MEASUREMENT EQUIPMENT ADEQUATE TO HANDLE EXPECTED RANGES OF FLOW RATES. __X__ YES __ NO ___ N/A

PART 2 - SAMPLING (Further explanation attached **See Notes**)
PERMITTEE SAMPLING MEETS THE REQUIREMENTS AND INTENT OF THE PERMIT. __X__ YES __ NO __ N/A
DETAILS: **See Notes.**

(a) LOCATIONS ADEQUATE FOR REPRESENTATIVE SAMPLES. __X__ YES __ NO __ N/A

(b) PARAMETERS AND SAMPLING FREQUENCY AGREE WITH PERMIT __X__ YES __ NO __ N/A

(c) PERMITTEE IS USING METHOD OF SAMPLE COLLECTION REQUIRED BY PERMIT. __X__ YES __ NO __ N/A
IF NO, __X__ GRAB ___ MANUAL COMPOSITE __ AUTOMATIC COMPOSITE ___ FREQUENCY

(d) SAMPLE COLLECTION PROCEDURES ARE ADEQUATE. __X__ YES __ NO __ N/A

(i) SAMPLES REFRIGERATED DURING COMPOSITING __X__ YES __ NO ___ N/A

(ii) PROPER PRESERVATION TECHNIQUES USED __X__ YES __ NO __ N/A

(iii) FLOW PROPORTIONED SAMPLES OBTAINED WHERE REQUIRED BY PERMIT __YES __ NO __X__ N/A

(iv) SAMPLE HOLDING TIMES PRIOR TO ANALYSES IN CONFORMANCE WITH 40 CFR 136.3 __X__ YES __ NO __ N/A

(e) MONITORING AND ANALYSES BEING PERFORMED MORE FREQUENTLY THAN REQUIRED BY PERMIT. __X__ YES __ NO __ N/A

(f) IF (e) IS YES, RESULTS ARE REPORTED IN PERMITTEE'S SELF-MONITORING REPORT. __X__ YES __ NO N/A

PART 3 - LABORATORY (Further explanation attached **See Notes**)
PERMITTEE LABORATORY PROCEDURES MEET THE REQUIREMENTS AND INTENT OF THE PERMIT. __X__ YES __ NO __ N/A
DETAILS:

(a) EPA APPROVED ANALYTICAL TESTING PROCEDURES USED. (40 CFR 136.3) __X__ YES __ NO __ N/A

(b) IF ALTERNATE ANALYTICAL PROCEDURES ARE USED, PROPER APPROVAL HAS BEEN OBTAINED. __ YES __ NO __X__ N/A

(c) PARAMETERS OTHER THAN THOSE REQUIRED BY THE PERMIT ARE ANALYZED. __ YES __X__ NO __ N/A

(d) SATISFACTORY CALIBRATION AND MAINTENANCE OF INSTRUMENTS AND EQUIPMENT. __X__ YES __ NO __ N/A

(e) QUALITY CONTROL PROCEDURES USED. (**Lab participates in DMR – QA Studies**) __X__ YES __ NO __ N/A

(f) DUPLICATE SAMPLES ARE ANALYZED __5 %__ OF TIME. __X__ YES __ NO __ N/A

(g) SPIKED SAMPLES ARE USED __10 %__ OF TIME. __X__ YES __ NO __ N/A

(h) COMMERCIAL LABORATORY USED. __ YES __X__ NO __ N/A

(i) COMMERCIAL LABORATORY STATE CERTIFIED. __ YES __ NO __X__ N/A

LAB NAME _____.

LAB ADDRESS _____.

Comments:
(1) Discharge flow is estimated from the hose pipe flow during the cleaning of the basins and the total capacity of each basin.
(2) Due to the continuous discharge of Outfall 002Q, the outfall is sampled monthly, instead of quarterly.

(3) The lab participates in the U.S. EPA DMR-QA Studies.

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SECTION L - EFFLUENT/RECEIVING WATER OBSERVATIONS (Further explanation attached _____)

OUTFALL NO.	OIL SHEEN	GREASE	TURBIDITY	VISIBLE FOAM	VISIBLE FLOAT SOLIDS	COLOR	OTHER
Outfall 002*	No	No	River turbidity	Yes – river foam	No	milky	None
Outfall 002Q*	No	No	No	No	No	clear	None

* Only Outfall 002Q was discharging at the time of inspection. The discharge was clear. Although there was no discharge from Outfall 002, there was foam and turbidity at the receiving water due to the river flow and discharge from Outfall 002Q.

The inspectors did not visit Outfalls 003, 004, 006 and 007.

(Sections M and N: Complete as appropriate for sampling inspections)

SECTION M - SAMPLING INSPECTION PROCEDURES AND OBSERVATIONS (Further explanation attached **__No samples were taken during the inspection).**

__ GRAB SAMPLES OBTAINED

__ COMPOSITE OBTAINED

__ FLOW PROPORTIONED SAMPLE

__ AUTOMATIC SAMPLER USED

__ SAMPLE SPLIT WITH PERMITTEE

__ CHAIN OF CUSTODY EMPLOYED

__ SAMPLE OBTAINED FROM FACILITY=S SAMPLING DEVICE

COMPOSITING FREQUENCY _____ PRESERVATION _____.
SAMPLE REFRIGERATED DURING COMPOSITING: __ YES __ NO

SAMPLE REPRESENTATIVE OF VOLUME AND NATURE OF DISCHARGE

SECTION N - ANALYTICAL RESULTS (Attach report if necessary) **N/A**

Water/NPDES Compliance Inspection, NPDES No. DC0000019

Department of the Army, Baltimore District, Corps of Engineers, Washington Aqueduct Division Washington, DC.

Inspectors: Adion Chinkuyu, Environmental Engineer, District Department of the Environment
George Onyullo, Environmental Protection Specialist, District Department of the Environment

Inspection Date: May 30, 2012

1. Introduction

On May 30, 2012, District Department of the Environment (DDOE) Water Quality Division inspectors Adion Chinkuyu and George Onyullo, conducted an NPDES Compliance Inspection at the Washington Aqueduct Station/facility in Washington, D.C (**Figure 1**), which is managed by the United States Army Corps of Engineers, Baltimore District. The inspectors reviewed records, interviewed personnel, conducted an inspection tour of the facility, and completed an EPA Form 3560-3 Water Compliance Inspection Report. The primary facility representatives were John Peterson, Superintendent; and Louis A. Levesque, Supervisor. The purpose of the inspection was to determine the accuracy and reliability of the facility's self-monitoring and reporting program.

The weather at the time of inspection was partly cloudy with a temperature of about 85ºF.

2. Facility Description and Background

The Washington Aqueduct water treatment facility produces drinking water for approximately one million people living, working, or visiting in the District of Columbia, Arlington County in Virginia, and the City of Falls Church in Virginia (**Figure 1**). The facility is a Federally-owned water supply agency and produces an average of 180 million gallons of water per day (MGD) from its two treatment plants (Dalecarlia and McMillan) located in the District of Columbia. The facility draws all its raw water from the Potomac River at two locations, Great Falls and Little Falls in Maryland (**Figure 1**). The Little Fall intake point (**Photo #1**) has not been used for some time.

(a) Water Treatment Plant Process

Under normal operating conditions, raw water is diverted from the Potomac River at (i) Great Falls dam, Maryland and piped to the Forebay Reservoir (**Photo #2 & 3**) and then onto the Dalecarlia Reservoir (**Photo #4**). During low flow conditions in the Potomac River, raw water is drawn from the Little Falls dam (**Photo #1**) and piped to the Dalecarlia Reservoir through the Forebay Reservoir. At either treatment plant, raw water is subjected to a full conventional treatment process (shown in **Figure #3)** to remove suspended solids, sediments, bacteria, and microorganisms to produce drinking water. (i) **Screening:** Raw water is passed through a series of screens designed to remove debris such as twigs and leaves (**Photo #5)** prior to pre-sedimentation and other treatment processes within the plant (**Photo #6).**

(ii) **Pre-sedimentation**: This involves settlement of sand and silt to the bottom as raw water moves slowly through a reservoir. Settled sand and silt are removed by dredging reservoirs periodically.

(iii) **Coagulation**: This involves adding alum (aluminum sulfate) coagulant to raw water as it flows to sedimentation basins. In solution, alum releases positively charged ions (cations), which cause the negatively charged particles suspended in the water to lump together into denser "particles' which are then able to settle out.

(iv) **Flocculation:** Is the gentle stirring of water to distribute the coagulant. This causes the particles to combine and grow large and heavy enough to settle. This process takes approximately 25 minutes.

(v) **Sedimentation**: The quiescent flow conditions in the sedimentation basins (**Photo #7)** cause the flocculated particles to settle to the bottom more efficiently**.** After about four hours, approximately 85 percent of the suspended material settles.

(vi) **Filtration**: Supernatant in the sedimentation basins decants into gravity filter media units consisting of layers of granular anthracite coal, sand, and gravel (**Photo #8**). Filtered water passes through to a collection system underneath.

(vi) **Disinfection**: Chlorine in the form of sodium hypochlorite is added with precision equipment to kill pathogens (bacteria, virus, etc.). Ammonia is then added. The chlorine and ammonia combine to form chloramine compounds. The concentration of chloramines in the water is closely monitored from the time it is added at the treatment plant to points near the furthest reaches of the distribution systems. Fluoride, in the form of hydrofluorosilicic acid, is added to help reduce tooth decay.

Calcium hydroxide (lime) is also added to reduce corrosion in the pipes and other equipment in the distribution systems. Adding small amounts of lime introduces a slight alkalinity and thus a chemical balance, which helps prevent corrosion in the water distribution system. Lime addition also reduces the leaching of substances from plumbing.

Powdered activated carbon is occasionally used for taste and odor control.

All the chemicals used at the facility (e.g., sodium hypochlorite and caustic soda) are stored at the site in well protected buildings in containers with secondary containments (**Photo #9**).

After the water has gone through the entire treatment process, it is referred to as finished or potable water.

(b) Treatment Plants

(i) McMillan Water Treatment Plant

McMillan Water Treatment Plant has a total capacity of 120 MGD. Raw water from Dalecarlia Reservoir is pumped to the three Georgetown Reservoir sedimentation basins (**Photo #10**) via the Georgetown Conduit. Carbon, fluoride, aluminum sulfate, and pre-chlorine are added in the Georgetown Conduit. According to the facility representatives, the residence time in the Georgetown sedimentation basins is between 1.25 and 3 days. From the Georgetown sedimentation basins, raw

water is pumped to the McMillan Reservoir through the McMillan Raw Water Pump Station. Sodium hypochlorite and filter aid polymers are added upstream of the twelve McMillan rapid sand filters. The resulting filter backwash is returned to McMillan Reservoir. Sodium hypochlorite, lime, and sulfur dioxide are added to the filtered water prior to storage in the clear water basins.

(ii) Dalecarlia Water Treatment Plant

Dalecarlia Water Treatment Plant (**Figure #2**) has a total treatment capacity of 240 MGD, but has only been producing 120 MGD. Raw water is pumped from Dalecarlia Reservoir (**Photo #6**) through four flow measuring flumes (**Photo #11**), and then onto the Dalecarlia sedimentation basins (**Photo #7**). Carbon, pre-chlorine, sodium permanganate, and aluminum sulfate are added upstream at different stages of the sedimentation process. The four sedimentation basins have a hydraulic retention time of 4 to 5 hours. Sedimentation is followed by the addition of filter-aid polymer and sodium hypochlorite prior to rapid sand filtration (36 total rapid sand filters) (**Photo #8**). Filters are periodically backwashed and the backwash water is returned to the Forebay Reservoir (**Photo #12**), and then onto Dalecarlia Reservoir. Ultimately fluoride, post hypochlorite, and lime are added prior to storage in the clear water basins.

The inspectors conducted a visual evaluation of the Dalecarlia Treatment Plant to assess compliance with the NPDES permit. The inspectors also visually evaluated the water reservoirs at the intake, water treatment process, residue processing facility, outfalls on the Potomac River (Outfalls 002, and 002Q), laboratory, and reviewed records and reports. No inspection was conducted at the McMillan Water Treatment Plant.

3. Permit Verification

Discharges from the facility are regulated by NPDES Permit No. DC0000019 (the Permit). The Permit was issued to Washington Aqueduct on November 20, 2008, and authorizes the discharge of wastewater through six NPDES outfalls. The active outfalls (002, 003, and 004) discharge to the Potomac River when the sedimentation basins are being cleaned. The cleaning process, as described by the facility representatives, involves opening basin drain valves and flushing out the sediment with chlorinated water. Chlorinated wash water is subsequently dechlorinated with sodium bisulfate prior to discharge. Lastly, the discharge pipe is flushed for two hours with raw water. The facility representatives indicated that the draining, washing, and flushing process takes about 6 to 8 hours. and the most recent basin cleaning and discharge occurred in January 2012. Since January 2012, the facility has not discharged because all the sediments or residuals are being processed (treated by drying) at the Residuals Processing Facility (RPF), which was constructed under the Federal Facility Compliance Agreement (FFCA) (**Figure #3**).

The permit was available for review at the facility and was satisfactory. The facility representatives indicated that since the RPF begun operating, there will be no discharge from the basins, apart from basin leakage and groundwater seepage through Outfall 002Q (**Photo #13**).

Residuals Processing Facility (RPF)

The Aqueduct entered into the FFCA with USEPA Region III. The FFCA was put into place to ensure that the Aqueduct takes any and all necessary steps within its power to achieve compliance with the

numeric discharge limitations (especially for suspended solids and metals) as set forth in the NPDES permit. To meet the requirements of the FFCA and comply with the NPDES permit limitations the facility constructed an RPF (**Figure #4**). The RPF collects and treats (by drying) all sediments/residues from the sedimentation basins, reservoir dredging and filter backwash. At the time of the inspection, the facility representative stated that the sediment treatment process involves scrapping the sediments from the bottom of sedimentation tanks, or dredging from the reservoirs, followed by pumping them into the Thickener Influent Splitter Chamber (TISC), then transferring the contents of the TISC into four Gravity Thickeners (GTs). The residuals from the GTs are subsequently taken to the Centrifuges, and ultimately to the storage bins (silos) (**Photo #14 & Figure #4**). The entire process is centrally managed via the SCADA system located in the RPF control room.

The treated residues are loaded into trucks and taken offsite by a contractor for compositing and land application (**Photos #15 & 16)**.

4. Outfalls and Receiving Waters

(a) Outfall 002

Outfall 002 discharges to the Potomac River (**Photo #18**) when cleaning the four Dalecarlia sedimentation basins (**Photo #7**). There was no discharge at the time of inspection. The last cleaning and discharge from the sedimentation basins occurred in January 2012.

(b) Outfall 002Q

Outfall 002Q discharges seepage from the Dalecarlia sedimentation basins and discharge from a spring located beneath the sedimentation basins. NPDES Permit Number DC0000019 identifies this discharge as the "Other Dalecarlia Discharge", which continuously discharges (**Photo #13**). The facility representatives indicated that Outfall 002Q discharges into the Potomac River through Outfall 002 channel. According to the plant representative, Outfall 002Q will be the only outfall to be monitored. Sampling at Outfall 002Q is being performed monthly instead of quarterly as indicated in the permit.

(c) Outfalls 003 and 004

Both Outfalls 003 and 004 discharge effluent and solids from the Georgetown sedimentation basins to the Potomac River. Outfall 004 receives discharges when Sedimentation Basin 1 is being cleaned out; Outfalls 003 and 004 receive discharge when Sedimentation Basin 2 is being cleaned out.

The facility representatives indicated that there was no discharge from either Outfall 003, or Outfall 004 at the time of inspection. However, these outfalls were not inspected because the facility representatives could not locate them through the thick bushes.

(d) Outfall 006

Outfall 006 discharges treated water blow-off from City Tunnel to Rock Creek. The outfall has not discharged for more than five years. The outfall was not inspected during this inspection.

(e) Outfall 007

Outfall 007 discharges treated water blow off from the Georgetown Conduit to the Potomac River. The outfall has not discharged for more than five years and was not inspected during this inspection.

Notes:

(1) Although there are four active outfalls: 002Q, 002, 003, and 004, the inspectors only inspected Outfalls 002Q and 002. Outfalls 003 and 004 were not inspected because the facility representatives could not locate them through the thick bushes. Outfalls 006 and 007 have not discharged in several years.

(2) Since February 2012, the facility staff collects samples from Outfalls 002Q only. This is because the facility has stopped draining and/or discharging sediments from the sedimentation basins through the other outfalls.

5. Records and Reports

Discharge Monitoring Reports (DMRs) and laboratory reports for the period of October 2010 to May 2012 were reviewed as a component of this inspection. The review included a comparison of reported monitoring results versus requirements and limitations contained within the permit.

(a) Effluent Quality

The Aqueduct exceeded DC0000019 permit limits for total suspended solids, total copper, and total aluminum until January 2012 when the facility stopped discharging to the Potomac River. The facility representatives stated that they had the FFCA, which gave them an exemption for total suspended solids and total copper. The FFCA addresses the Aqueduct's inability to meet Permit limits and the Aqueduct's plans to eliminate discharges to the Potomac River.

The facility stopped discharging to the River when it started operating the RPF in January/February 2012 (**Figure 4 & Photos #14, 15 & 16**).

Review of the discharge data from Outfall 002Q between February and May 2012 found that the facility was in compliance with Permit limits. At the time of inspection, discharge from Outfall 002Q was relatively clear (**Photo #13**), and had no foaming on contact with the flowing receiving water body (**Photo #17**).

(b) Flow Measurement

Currently, the facility does not measure the effluent it discharges as indicated in the permit. Instead, discharges are estimated from the basin capacities and the amount of water used during the cleaning process. The facility representatives stated that since the facility started treating residuals/sediments, discharge flow measurement has become redundant (more measurement than required in the permit) for all practical purposes.

6. Self-Monitoring Program

The facility is conducting its self monitoring program in accordance with Permit Part II, Section C.3, which requires that monitoring be conducted consistent with procedures approved under 40 CFR 136. Raw and processed waters are monitored at different stages of the treatment process.

7. Laboratory

The facility's in-house laboratory is used to monitor effluent samples for all permit parameters according to the schedules set forth in NPDES Permit DC0000019. The laboratory equipment (**Photo #18**), calibration records, bench/log books and lab reports (**Photo #19**) appeared to be complete and in order. Chemicals and buffer solutions used in the lab were up to date (**Photo #20**). The lab also participates in the EPA DMR-QA Studies.

8. Sludge Handling and Disposal

The facility representatives indicated that during previous sedimentation basins cleaning events, all sediments and sludge used to be washed down the pipe to the outfalls at the Potomac River. This practice made the Aqueduct exceed DC0000019 permit limitations for total suspended solids, copper, and aluminum. To solve the problem, the Aqueduct entered into an FFCA to construct an RPF. As noted elsewhere in this report, the RPF is now fully operational.

The facility representatives indicated that the Aqueduct does not need to drain the water when cleaning the sedimentation basins because at the bottom of each basin, there are scrapers (**Photo #21**) that collect all sediments and pump them to the RPF building. In the RPF building, the residues/sediments are treated through a combination of solids concentration and drying processes. First, the residuals go into a Thickener Influent Splitter Chamber from where they are distributed to four Gravity Thickeners, and then onto Centrifuges for further drying (**Photo #14 & Figure #3**). After drying, the residuals are sent to storage bins - ready to be weighed and trucked offsite. The Aqueduct pays contractors to transport and dispose of the residuals (**Photos # 15 & 16**). The treated residual is about 25 percent solids and is mostly used in making soil compost that is sold to the public. The inspectors observed that the facility is handling and disposing of the residues properly.

9. Best Management Plan

The facility uses large quantities of different chemicals to treat the water. Such chemicals include lime, methanol, ferric, ferrous, polymer, caustic soda, sodium hypochlorite, and bisulfate. The inspectors observed that the chemicals are properly kept in primary storage containers with secondary containment to prevent spills and release (**Photo #9**).

Part II, Section E of the NPDES permit (Best Management Practices) requires the permittee to have a Best Management Practices (BMP) plan. In addition to the BMP plan, the Aqueduct has a Spill Prevention, Control and Countermeasure Plan (SPCC). The SPCC Plan addresses: (a) operating procedures the facility implements to prevent oil spills; (b) control measures installed to prevent oil from entering navigable waters (i.e. secondary containment); (c) countermeasures to contain, clean up and mitigate the effects of oil spills. The inspectors reviewed both the BMP and SPCC plans as part of

this inspection. The most recent plans were dated October 2010. The plans contain the requirements and BMPs as specified in the permit and were found to be satisfactory.

Inspection of the facility indicated that the facility is properly operated and maintained consistent with its current NPDES permit.

10. Compliance Schedule

The facility is meeting its compliance schedule for the FFCA. Specifically, the facility completed construction of the RPF and is now fully operational and as a result the Aqueduct has stopped discharging sediments to the Potomac River. The RPF currently produces about 100 tons of dried residues every month. As noted earlier, the dried residuals are loaded on trucks and taken offsite.

11. Status of the 2011 (last) Inspection Findings

During the 2011 inspection, the inspectors found that the facility exceeded the permit effluent limits for total suspended solids, total iron, total aluminum, and total copper. During this 2012 inspection cycle, the inspectors found that the facility has stopped discharging sediments to the river because all sediments are now being processed at the RPF building. There was no exceedance for either total suspended solids, or other permitted constituents. The dried/processed residues are taken offsite for composting and final disposal.

The Aqueduct also revised its BMP and SPCC plans and is implementing them accordingly.

12. Attachments:

(a) EPA Form 3560-3.
(b) This Narrative.
(c) Photo Log.

Water/NPDES Compliance Inspection
NPDES No. DC0000019

Department of the Army, Baltimore District, Corps of Engineers
Washington Aqueduct Water Treatment Plant
Washington, DC.

Inspectors: Adion Chinkuyu, DDOE
George Onyullo, DDOE

Inspection Date: May 30, 2012

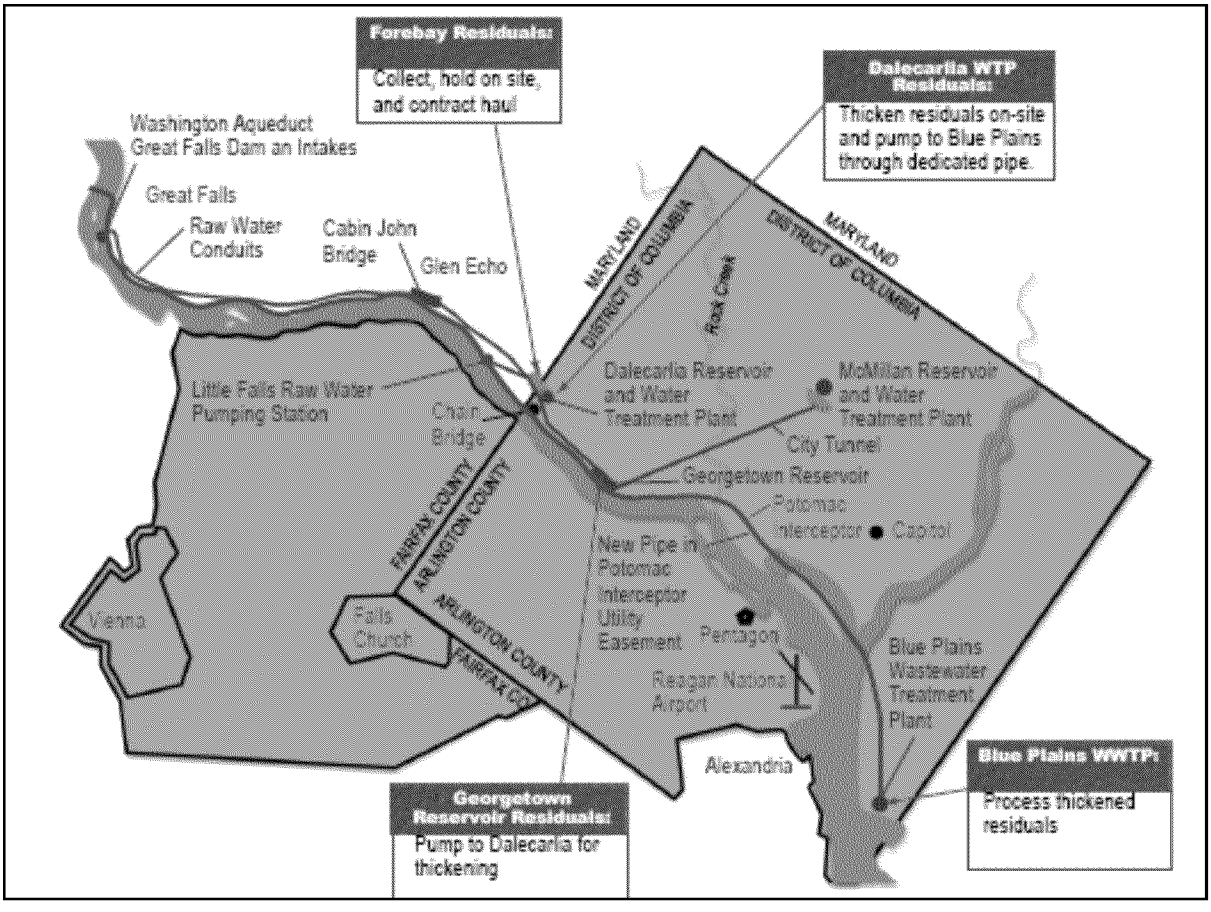


Figure 1: An overview of the Washington Aqueduct Facility service area.

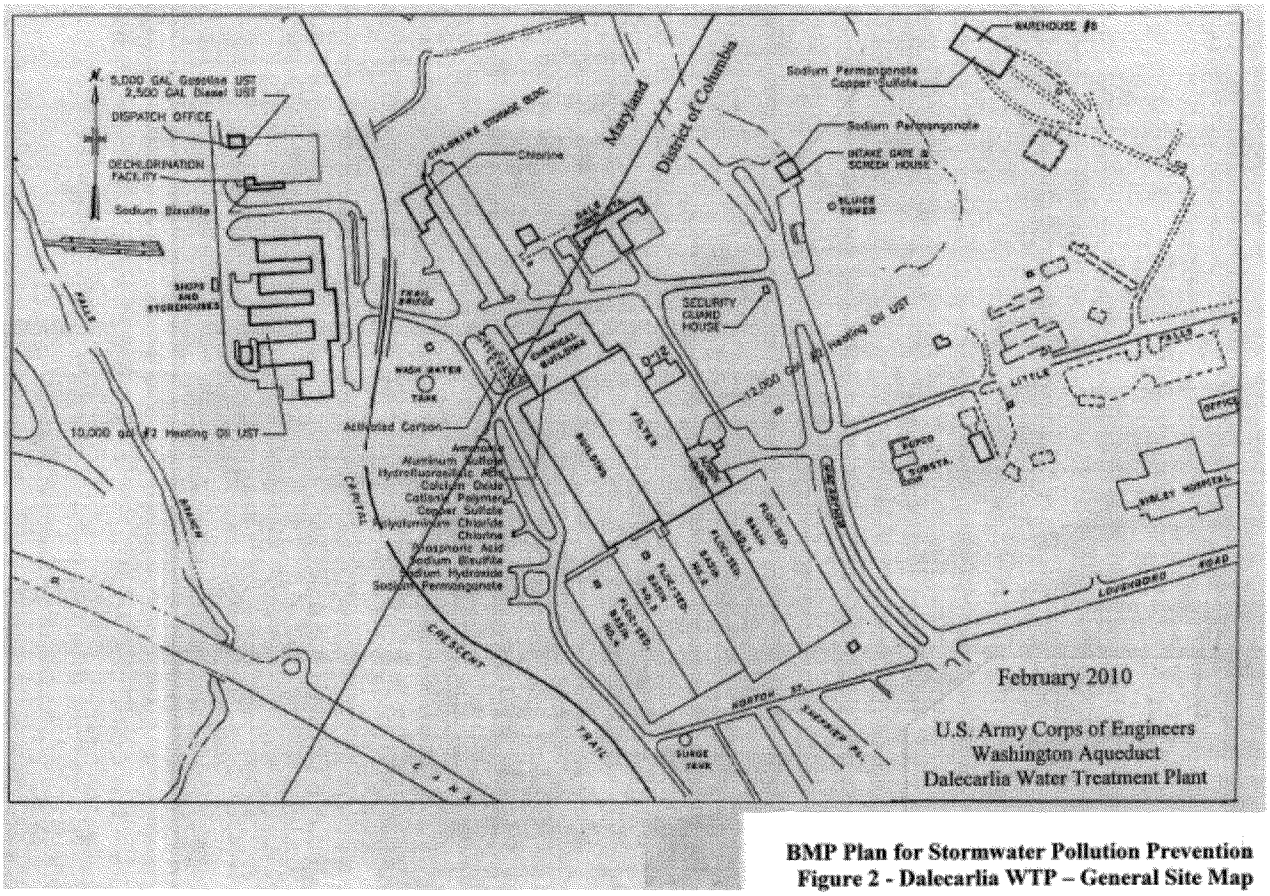


Figure #2: Dalecarlia Water Treatment Plant - General site plan.

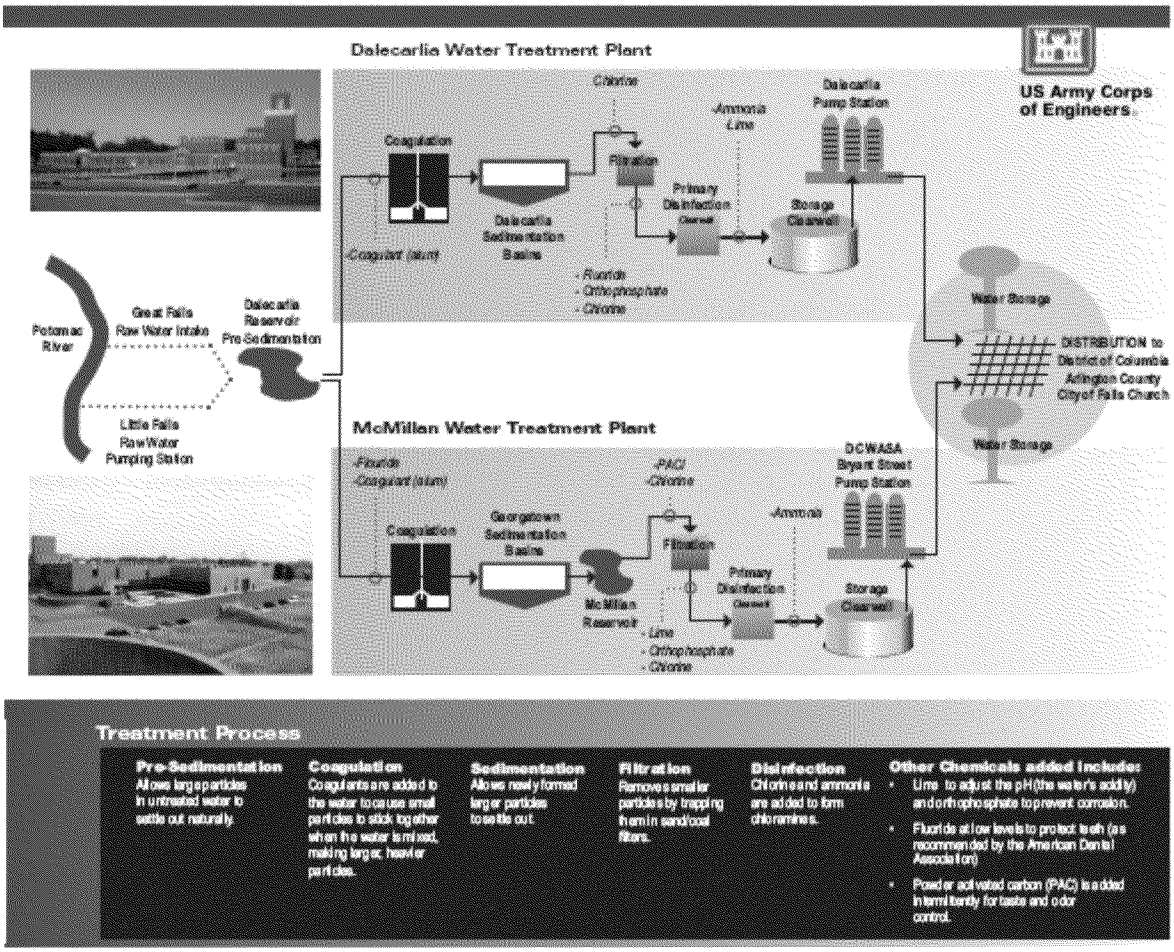


Photo #3: Washington Aqueduct water treatment process.

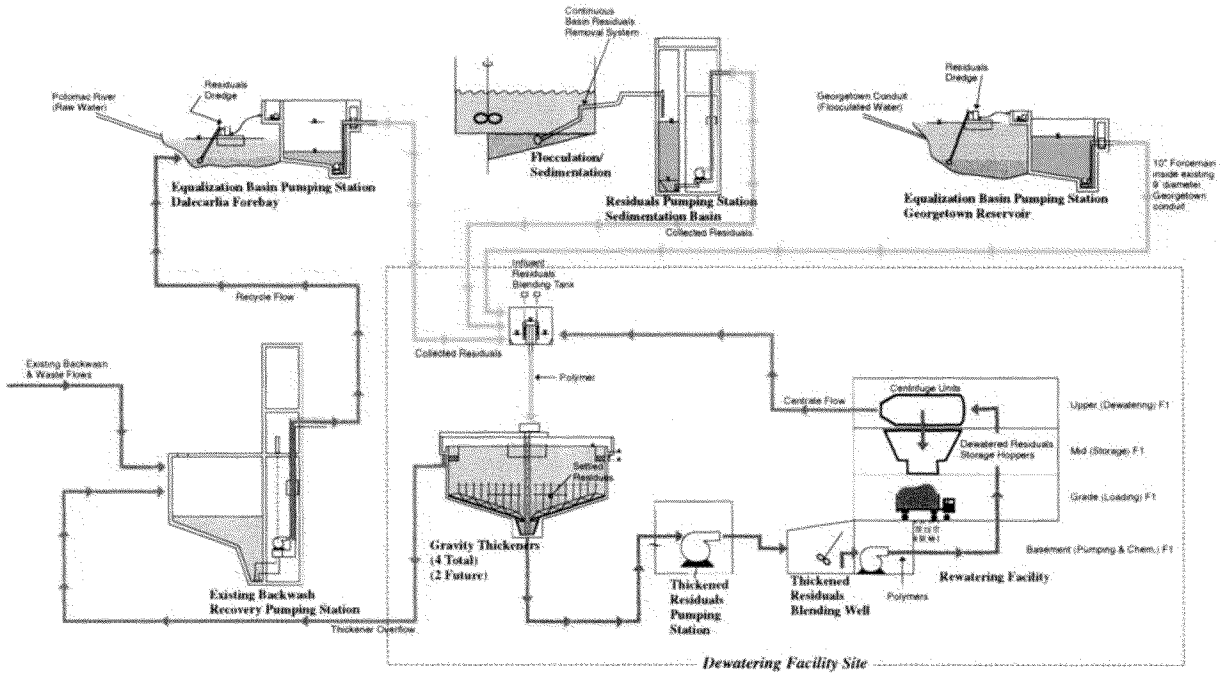


Figure #4: Residual management/treatment system.

Photo #1: Water intake point (left) at the Little Falls dam on the Potomac River (right). The intake has not been used in years. Outfall 002 is downstream of the intake point.

Photo #2: Intake structures at the Forebay Reservoir (left). Raw water from Great Falls on the Potomac River flows under gravity into the Forebay Reservoir (right).

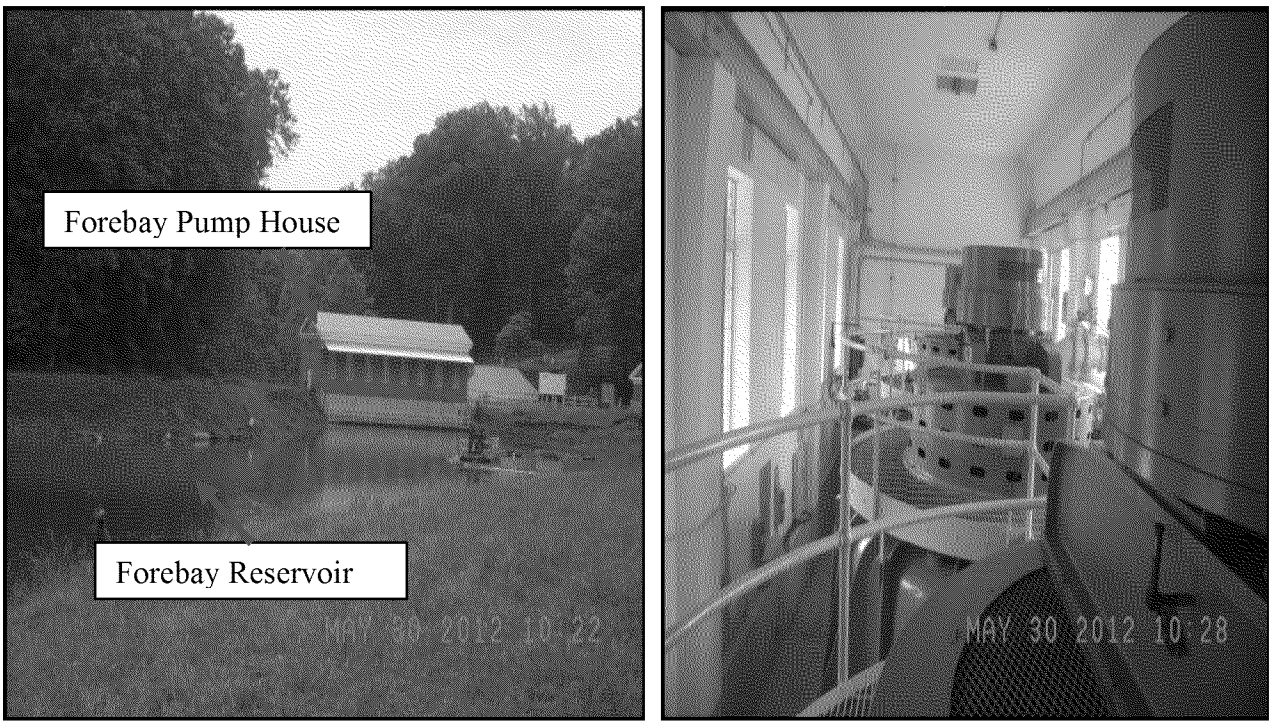


Photo #3: Pump house (left) and pumps at the Forebay Reservoir (right).

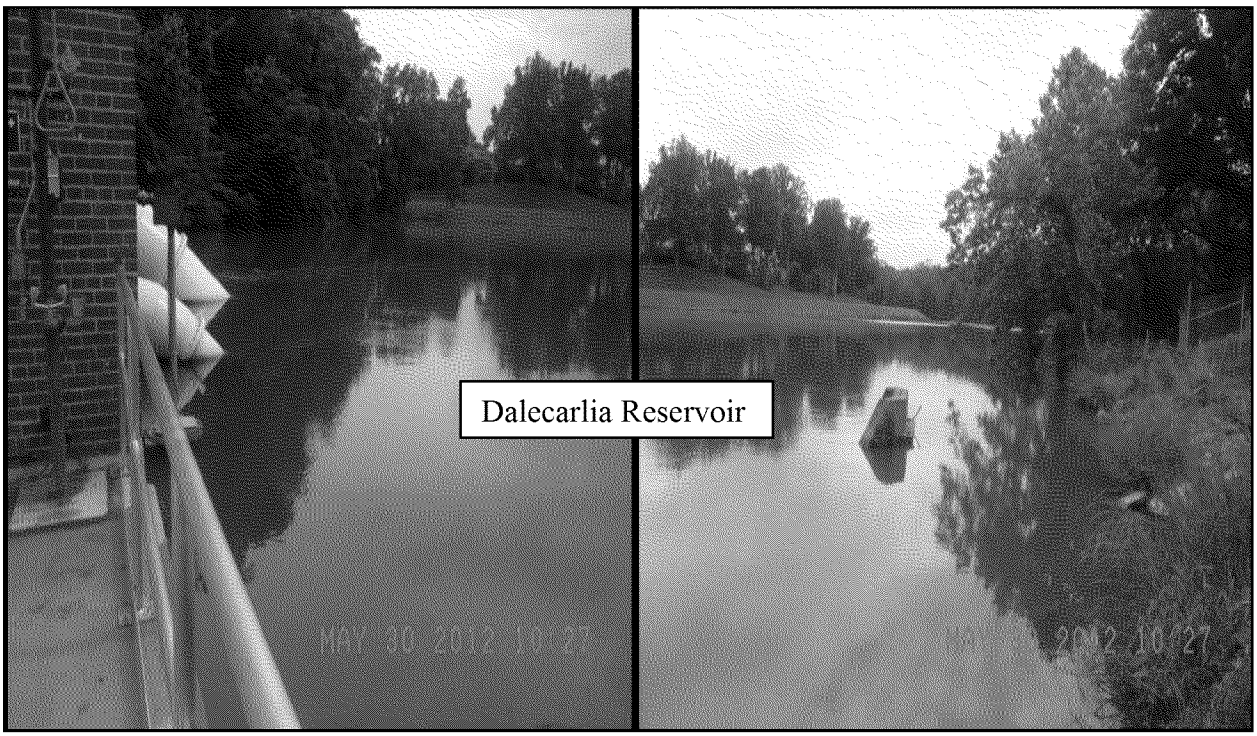


Photo #4: The Forebay Reservoir pumps (left) discharge into the Dalecarlia Reservoir (right).

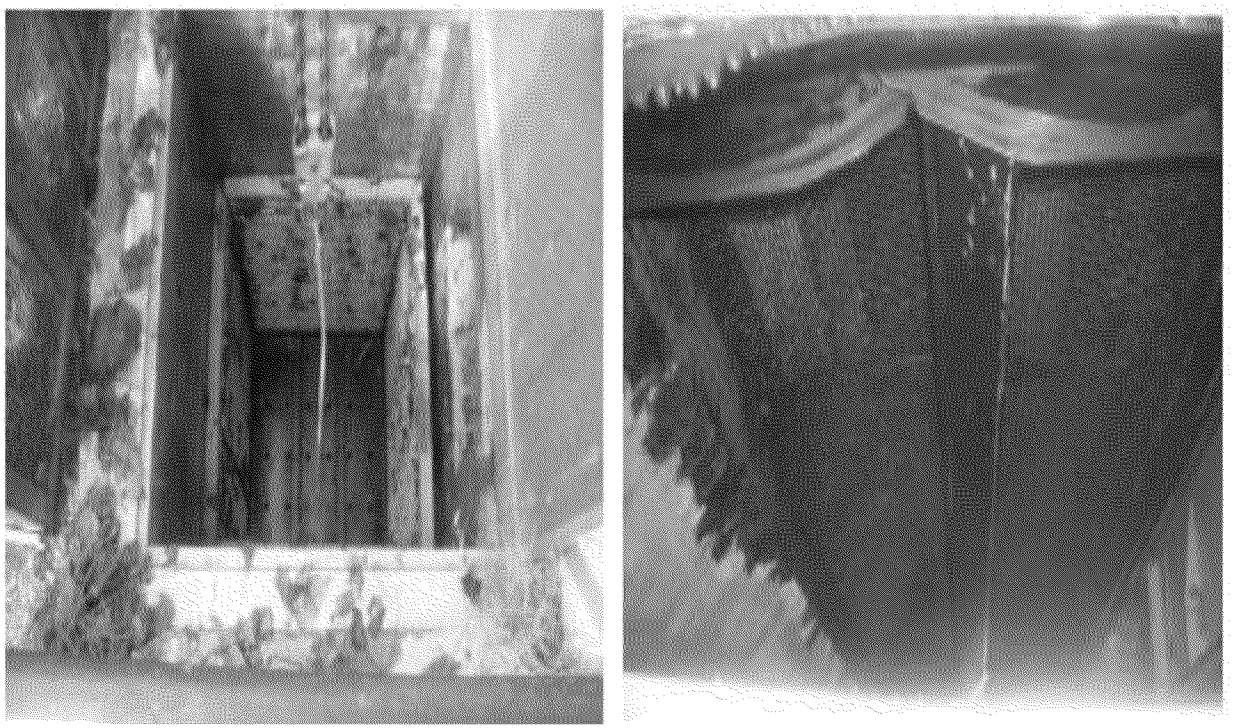


Photo #5: Screens for removing debris, trash and litter at Dalecarlia Reservoir pumping station.

Photo #6(a): Pump house at Dalecarlia Reservoir.

Photo #6(b): Pumps at Dalecarlia Reservoir.

Photo #7: Sedimentation basins at Dalecarlia Treatment Plant.

Photo #8(a): A model of rapid gravity sand filter. **Photo #8(b)**: Empty rapid gravity sand filter.

Photo #8(c): Rapid gravity sand filters in the filtration room.

Photo # 9(a): Storage tanks of hypochlorite (left) and caustic soda (right) inside the hypochlorite building.

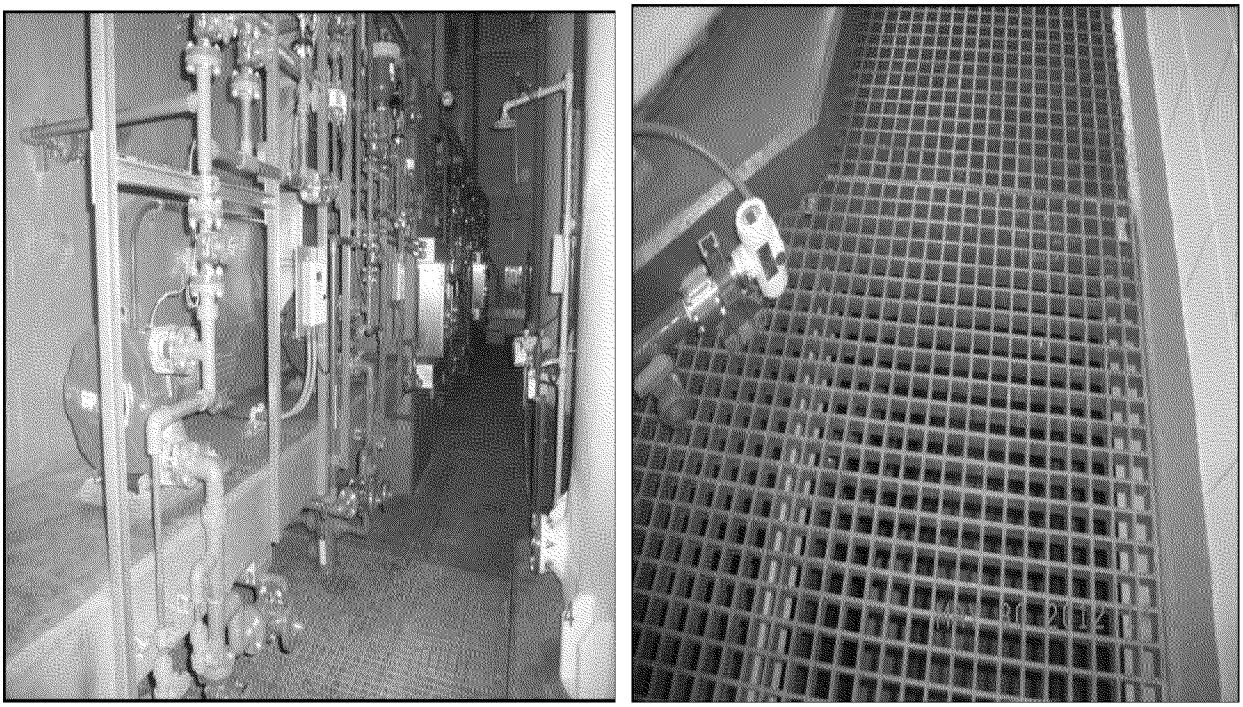


Photo #9(b): Hypochlorite and caustic soda pumps (left). Note the secondary containment areas around the pumps and storage tanks (right).

Photo # 10: Georgetown Reservoirs.

Photo #11: Flow gates to the Dalecarlia sedimentation basins.

Photo #12: Filter backwash water is returned to the Forebay Reservoir.

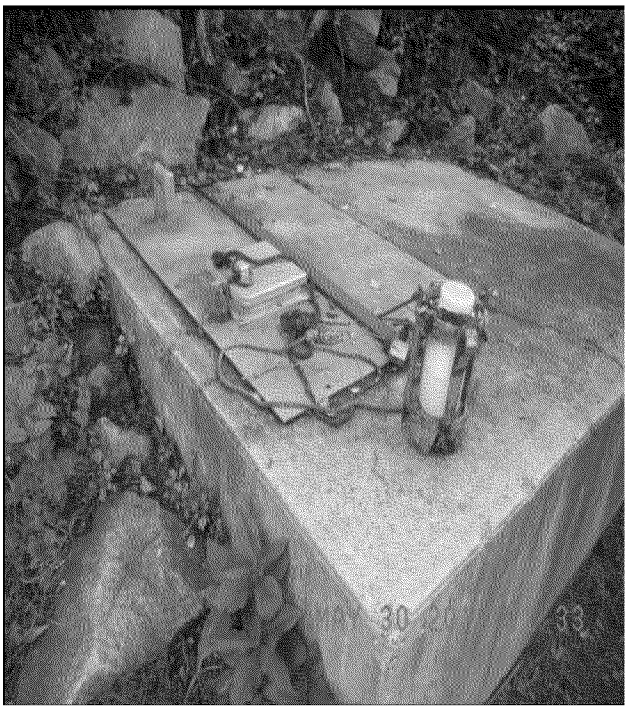


Photo #13: Outfall 002Q – sampling equipment (left) and water continuously flowing from Outfall 002Q (right).

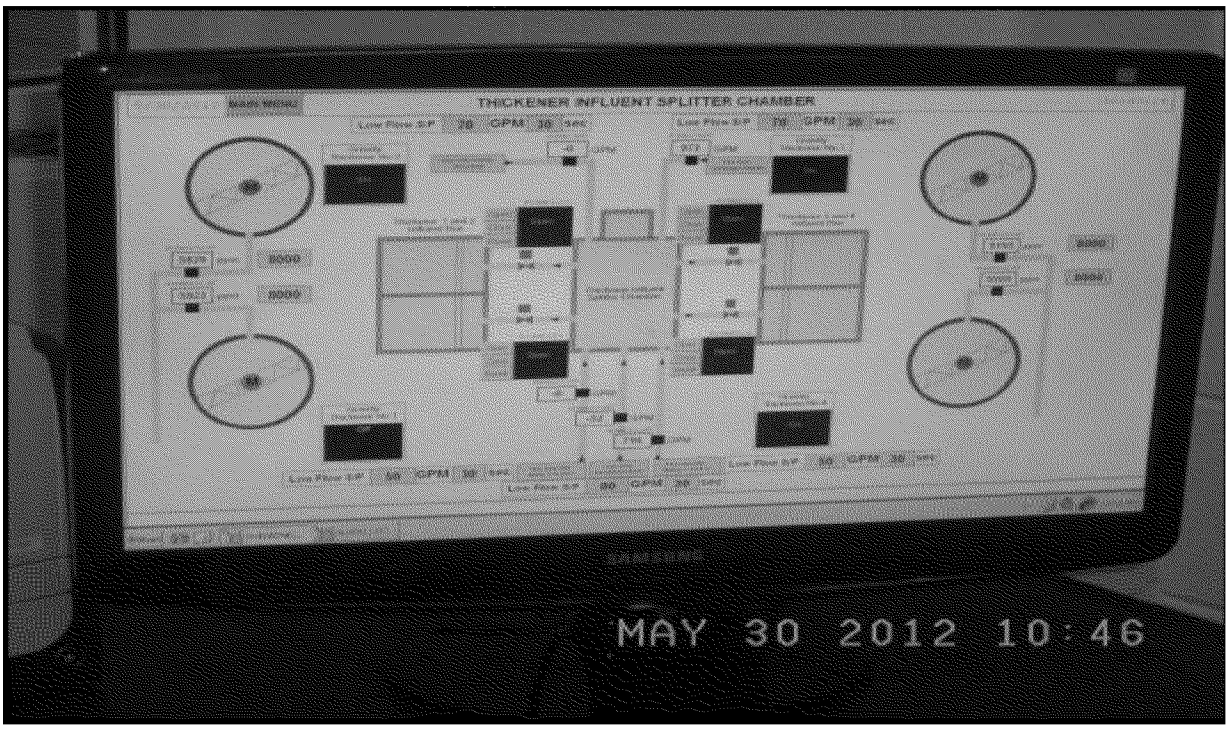


Photo # 14(a): Screen shot of the arrangement of the Residue Processing Facility – Thickener Influent Splitter Chamber.

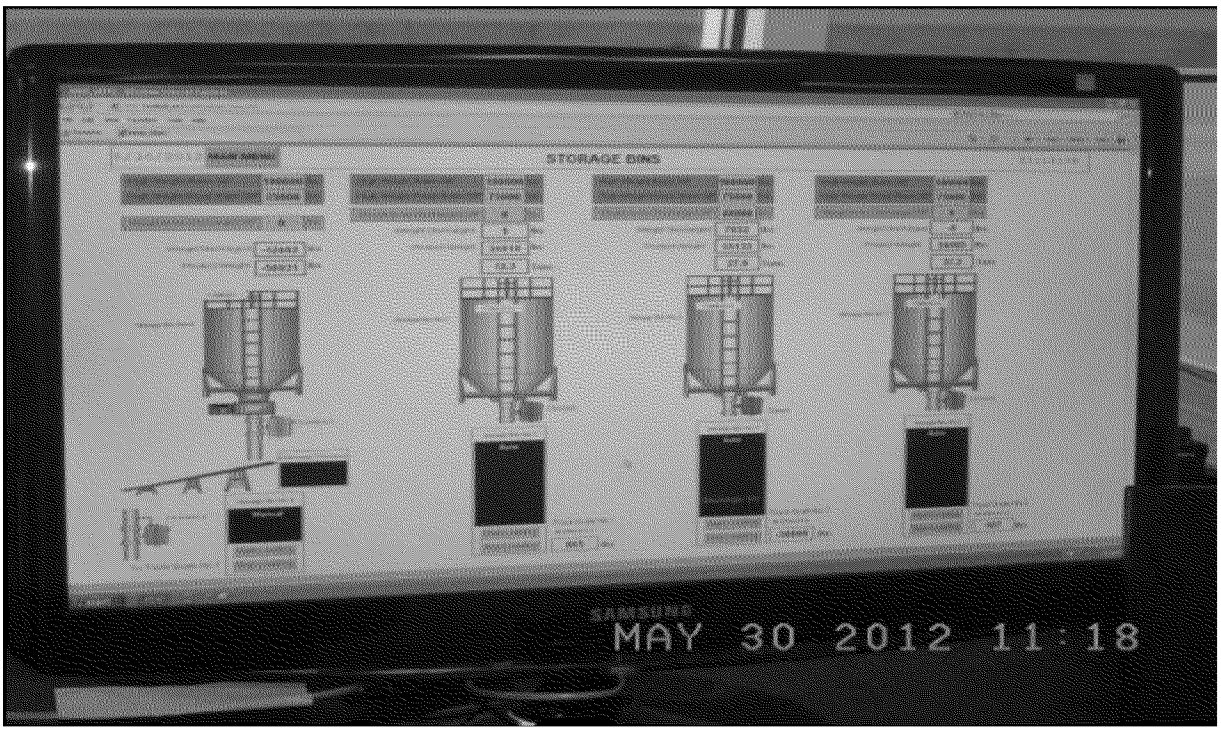


Photo # 14(b): Screen shot of the arrangement of the Residue Processing Facility – Storage Bins.

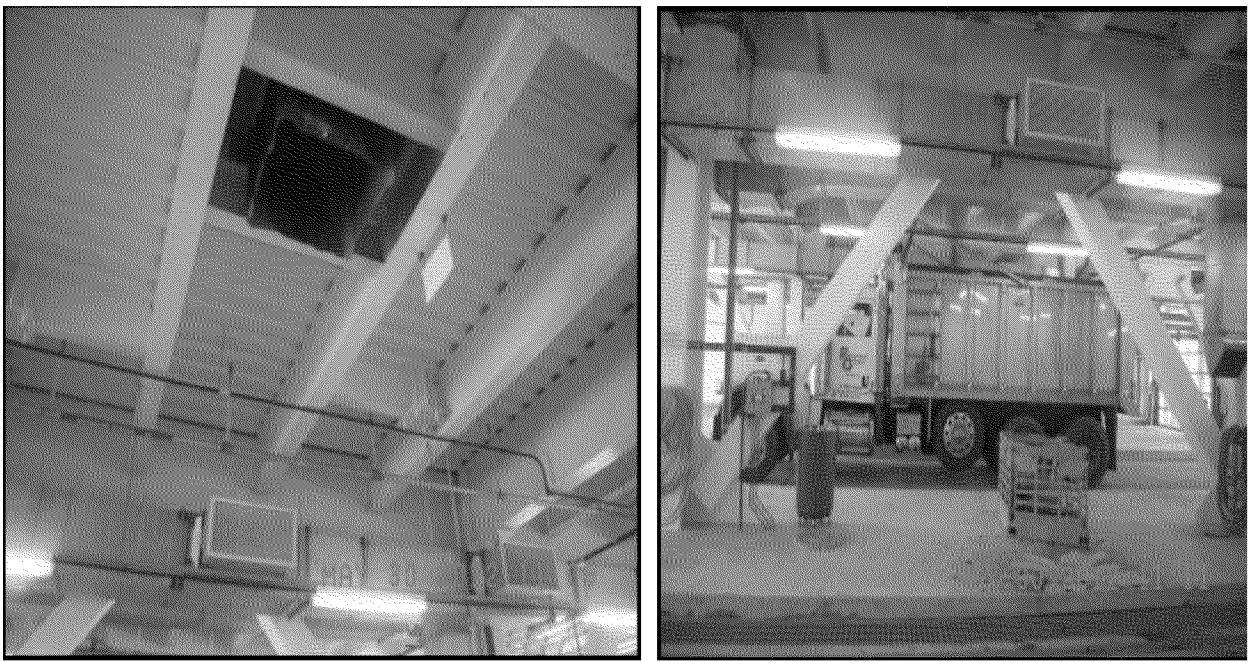


Photo #15: Left - treated residue chute from the chamber bins and right - treated residues are loaded in a truck.

Photo #16(a): The Washington Aqueduct has contracted Recycled Green Industries of Maryland to dispose of the treated residues.

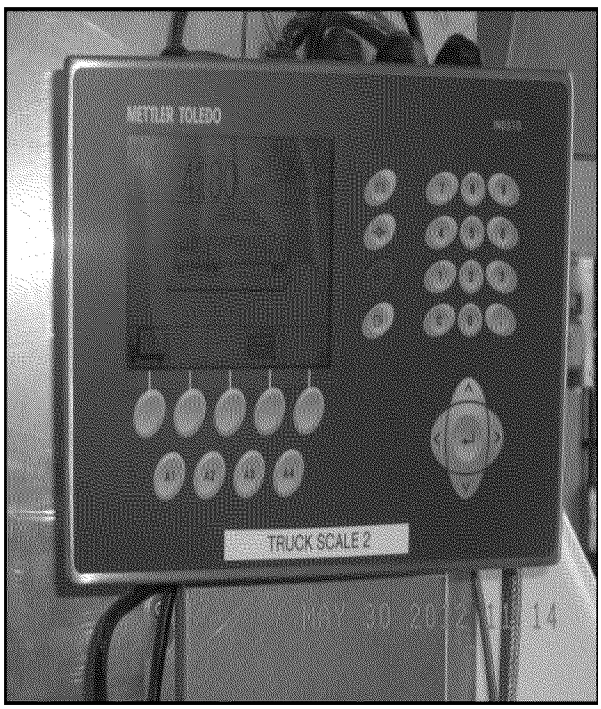


Photo #16(b): Treated residues are weighed before being trucked offsite for disposal.

Photo #17: Discharge location of Outfall 002 at the Potomac River (receiving water).

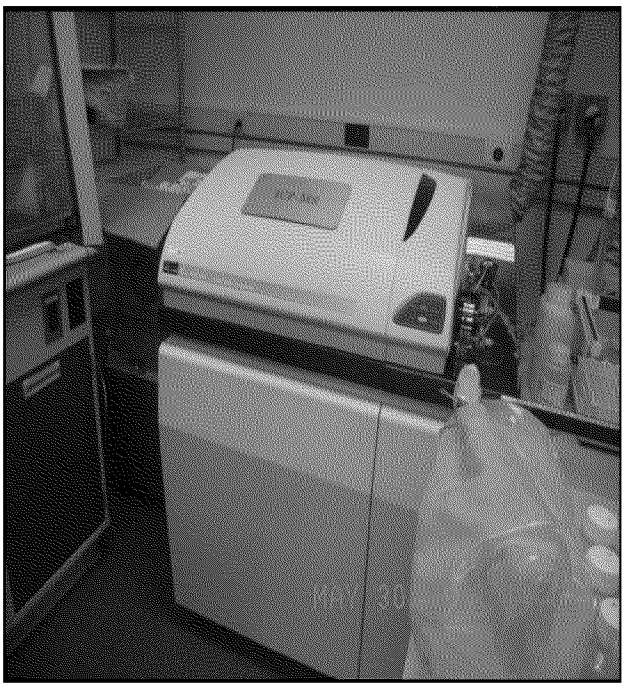
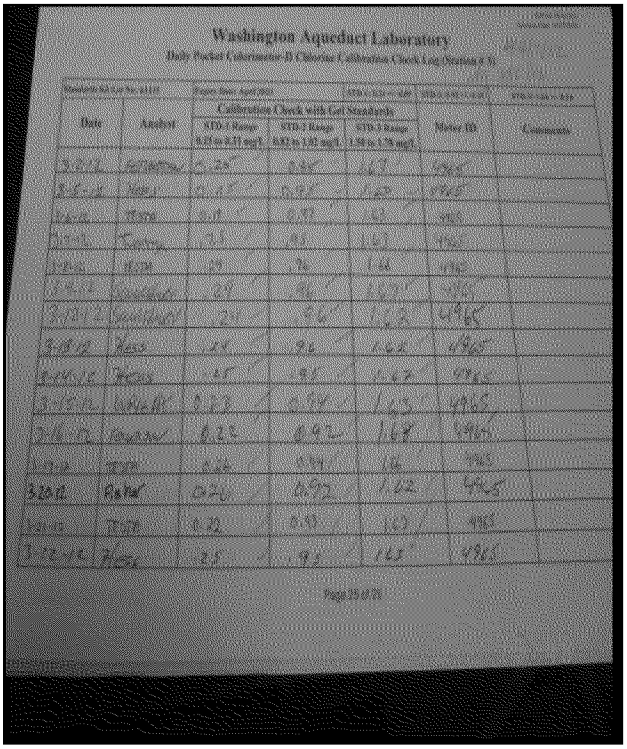


Photo #18: Laboratory equipment.



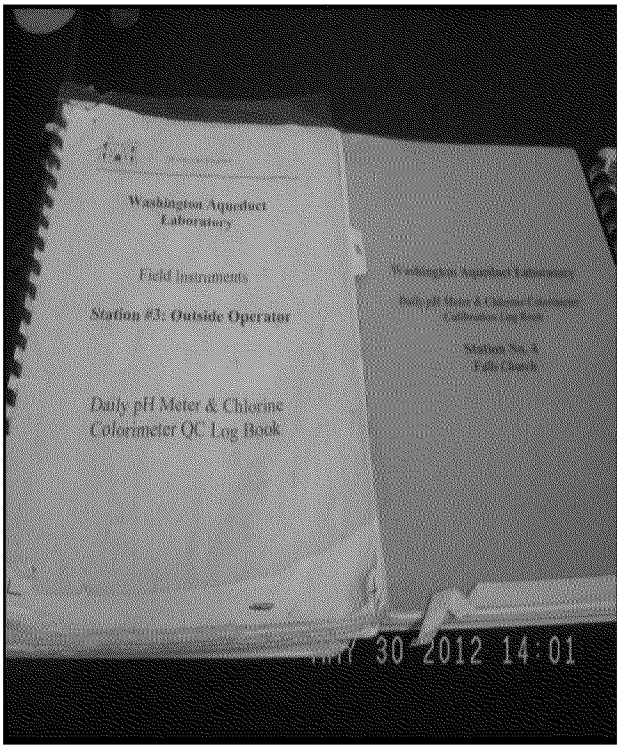


Photo #19: Laboratory calibration log books.

Photo #20: Laboratory chemicals or pH buffer solutions.

Photo #21: Scrappers for removing sediments/ residues at the bottom of sedimentation basins.